

(12)

**EUROPEAN PATENT APPLICATION**

(21) Application number: 86850256.8

(51) Int. Cl.<sup>4</sup>: **A 61 F 13/18**

(22) Date of filing: 15.07.86

(30) Priority: 31.07.85 JP 169634/85

(43) Date of publication of application:  
25.02.87 Bulletin 87/9

(84) Designated Contracting States:  
DE FR NL SE

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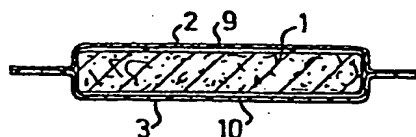
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(54) Disposable absorbent product such as a diaper, a sanitary towel or the like, and a method of producing such an article.

(57) The present invention relates to a disposable, absorbent product such as a diaper, a sanitary towel or the like, comprising an absorption body (1), an outer layer (2) of liquid-pervious material facing towards the wearer when in use, and an outer layer (3) impervious to liquid on the opposite side of the body, both layers extending past the contour of the body and being mutually united at these extended portions, as well as being attached to the body by a binding agent.

Primarily distinguishing for a product made in accordance with the invention is that the layers (2, 3) have on their inner sides a coating of binding agent (9, 10), which is applied so thinly that on being applied, it parts to form a network-like pattern of binding agent extending over the respective layer, and in that these coatings are the means of mutually sealing the layers at their portions extending past the contour of the body, as well as the means of attachment between the respective layer and the absorption body.



**FIG. 2**

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Disposable absorbent product such as a diaper, a sanitary towel or the like, and a method of producing such an article

The present invention relates to a disposable absorbent product, e.g. a diaper, a sanitary towel or the like, comprising an absorption body, an outer layer of liquid-pervious material facing towards the wearer when the product is in use, and an outer layer impervious to liquid on the opposite side of the body, both these layers extending a distance past the contour of the absorption body, where they are mutually united, as well as being fixed to the body by a binding agent.

The invention also relates to a method of producing such a product.

In the systematic manufacture of disposable products of the kind mentioned, the sheath enveloping the absorption body is normally sealed with a binding agent. The outer skin or layer is furthermore attached to the absorption core, the object of attaching the liquid-pervious layer to the absorption core being to keep this layer in contact with the core for providing good liquid transport between layer and core, and also for reinforcing the core, which normally comprises so-called fluffed cellulose, while the attachment between the liquid-impervious layer and core is made for reinforcing the latter.

Totally coating the layer with binding agent is unsuitable from several aspects. For manufacturing reasons, the binding agent used at present for disposable articles is hot-melt glue, and because of the cost it is inconceivable to coat the layers entirely. In addition, a completely covering coating of glue on the liquid-pervious skin is extremely unfavourable for liquid migration to the absorption

body. In a known method of partially coating the layers with hot-melt glue, the latter is applied in transverse, separate glue beads. However, this has some substantial disadvantages. The beads of binding agent must namely be  
5 comparatively thick for a satisfactory attachment of the layers to take place. This naturally results in a large consumption of glue. The application of the glue in such beads further results in that the skin materials will be stiff, and thus uncomfortable to the wearer.

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In another known method the glue is applied in separate dots. The stiffness problem is indeed avoided here, but that of large glue consumption still remains. As is also the case with transverse glue beads, the glue dots must  
15 namely be very thick for there to be secure mutual attachment of the layers' edge portions, which extend a distance past the edges of the absorption body. These end portions are namely united by compression, and for contact and adherence to take place in a satisfactory manner, it is  
20 important that the glue dots or beads applied to a layer have a thickness such that, when the layers are compressed, they are given the contact pressure necessary for adherence to take place.

25 An absorbent product of the kind described in the introduction has been provided by the present invention, and in relation to the attachment of the sheath, this product has a plurality of advantages compared with such products in the prior art.

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A disposable product implemented in accordance with the invention is primarily characterized in that the layers have a coating of binding agent on their inner sides, which is so thinly applied that on application it has par-  
35 ted and formed a network-like pattern extending over the respective layer, and in that this binding coating is both

the means for the mutual attachment of the two layers at the portions thereof extending past the contour of the absorption body and also the means of attachment between the respective layer and the absorption body.

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An essential advantage in applying the binding agent in a network-like pattern over the insides of both layers is that a more secure attachment of the layers' edge portions along the contour of the absorption body is afforded. An attachment binding agent to binding agent namely takes place, which provides a secure attachment, even for low contact pressure.

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The cohesive, network-like binding agent pattern on the insides of both layers also provides secure attachment of the layers to the absorption body, as well as better reinforcement thereof, compared with the previously known binding agent patterns described hereinbefore.

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The inventive application of binding agent gives, in addition, considerably less consumption of the agent than applications involving beads or spots. For applications to both layers in accordance with the invention, there is namely a consumption of merely about  $6 \text{ g/m}^2$  for each of the layers, whereas for beads or spots it is about  $20 \text{ g/m}^2$ .

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The invention will now be described in detail with reference to an embodiment illustrated in the accompanying drawing, where

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Figure 1 is a plan of an embodiment of an absorbent products implemented in accordance with the invention;

Figure 2 shows a cross-section of this product; and

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Figure 3 schematically illustrates how the binding agent pattern is applied.

5 The product illustrated in Fig. 1 comprises a diaper with a substantially T-shaped absorption body 1, suitably consisting of fluffed cellulose. On one side of the body there is placed a skin or layer 2 of liquid-pervious material, e.g. a fibre fabric, and on the other side of the body there is placed a skin or layer 3 of liquid-imper-  
10 vious material, e.g. polyethylene film. Both layers have portions extending past the absorption core, these portions being intended for mutual attachment. Starting from the crotch portion, and in a direction towards the back end of the diaper, the layers project increasingly out-  
15 wards to form triangular flaps 4,5, which are intended to go round the bottom of the wearer. The described diaper is a so-called complete disposable diaper, the triangular flaps 4,5 of which are taken round the legs of the wearer and are fastened by ribbon flaps 6,7 against the outside  
20 of the front end of the diaper, whereby a trouser-like unit is obtained.

The diaper is provided with elastic 8, which is arranged in a V-shaped pattern, with the tip of the pattern situa-  
25 ted at the front end of the diaper.

The parts included in the diaper are kept together by a binding agent, which is applied to form a very thin, network-like pattern. The agent, which is applied to the in-  
30 sides of both layers 2,3 has been denoted 9,10 in Fig. 2.

The principle for applying the binding agent in accordance with the invention is illustrated in Fig. 3. The agent, which is in the form of a hot-melt glue, is supplied to a  
35 so-called slot nozzle 11 having a narrow outlet gap 12. The material web 13, which is to be coated with glue, is

advanced past the nozzle and is urged into contact therewith by rolls 14,15, the advancing web entraining glue from the nozzle. The amount of glue extracted from the nozzle is critical in forming the desired network-like pattern, and is controlled by the liquid pressure in the glue and the size of the nozzle. The latter should have a gap in the order of magnitude 0.3 mm.

With a suitable liquid pressure at the nozzle and the selection of a gap in the order of magnitude mentioned, the glue will part into strands on being drawn out of the nozzle by the material web and form a network-like pattern as illustrated in Fig. 3.

With the aid of the hot-melt glue application, both the layers are attached to the absorption body, and the portions of the layers projecting past it are mutually attached. The elastic is mounted in a tensioned condition against one of the layers and is fastened thereto with the aid of the glue coating.

The invention is not restricted to the embodiment described here, since a plurality of modifications are possible within the scope of the following claims.

CLAIMS

1. Disposable, absorbent product, e.g. a diaper, a sanitary towel or the like, comprising an absorption body (1), an outer layer (2) of liquid-pervious material facing towards the wearer when in use, and an outer layer (3) impervious to liquid on the opposite side of the body, both these layers extending past the contour of the body, and being mutually united at the extended portions, and also attached to the body (1) by a binding agent, characterized in that the layers (2,3) have a coating of binding agent (9,10) on their inner sides, which is so thinly applied that on application it has parted and formed a network-like pattern extending over the respective layer, and in that this binding agent coating is both the means for the mutual attachment of the two layers at the portions thereof extending past the contour of the absorption body (21) and also the means of attachment between the respective layer and the absorption body.

2. Method of attaching, in a disposable product, e.g. a diaper, a sanitary towel or the like, two outer layers (2,3) to form a sheath enveloping an absorption body (1) included in the product, both layers (2,3) having such a size and being mounted in such a manner that they extend past the contour of the absorption body (1) and are mutually united at the extended portions, characterized in that a binding agent coating (9,10) is applied to the insides of both layers so thinly that the coatings part, on being applied, to form a network-like pattern of binding agent extending over the layers (2,3) and in that the layers are attached to either side of the absorption body and are mutually attached at their portions extending past the contour of the absorption body with the aid of these binding agent coatings.

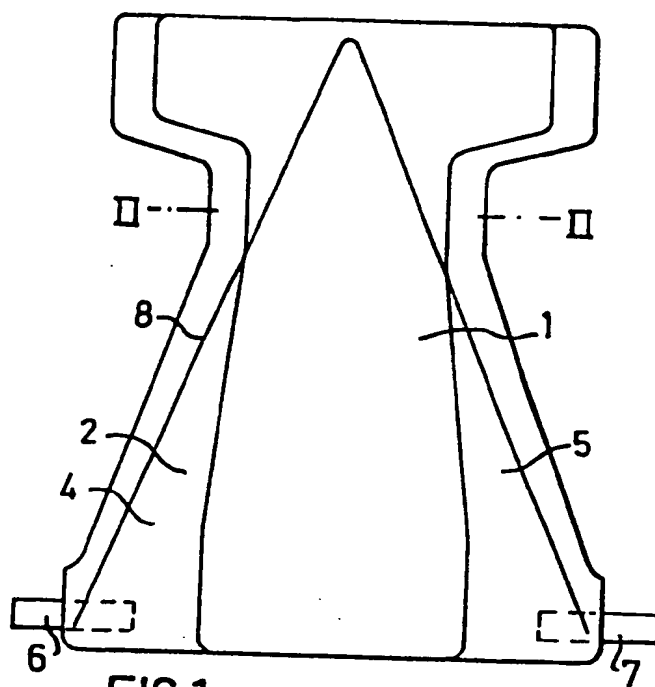


FIG. 1

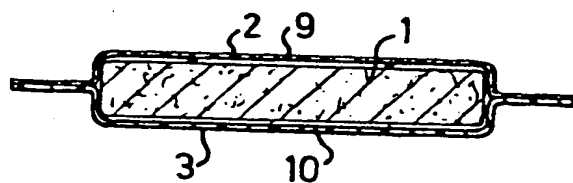


FIG. 2

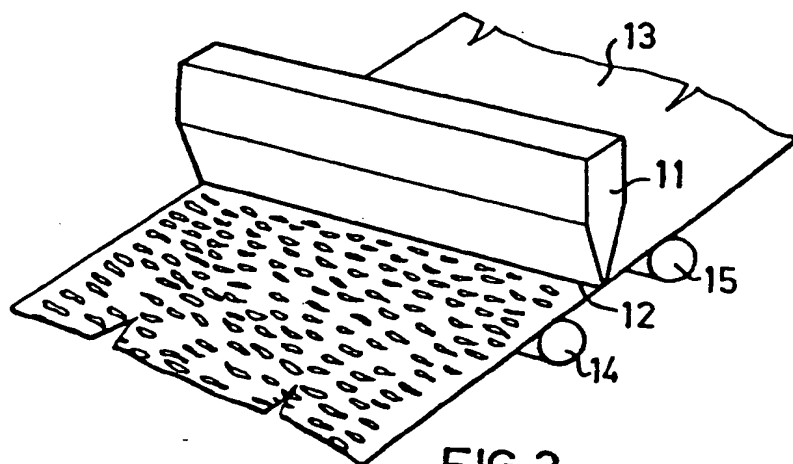


FIG. 3



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Europäisches Patentamt  
European Patent Office  
Office européen des brevets

(11) Publication number:

**0 211 815**  
**A3**

(12)

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25.02.87 Bulletin 87/9

(88) Date of deferred publication of search report: 23.09.87

(84) Designated Contracting States:  
DE FR NL SE

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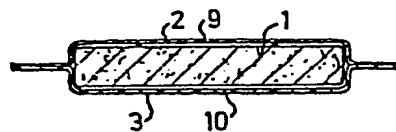


FIG. 2

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 4)
A	US-A-3 527 221 (CROON) * column 4, line 59 - column 5, line 12; claim 1; figures 1-3 *	1,2	A 61 F 13/18
A	DE-C-1 766 437 (VEREINIGTE PAPIERWERKE SCHICKEDANZ & CO.) * column 2, lines 40-53; claims 1, 2; figure 1 *	1	
A	EP-A-0 021 662 (RIEDEL TEXTILE CORP.) * page 12, lines 12-22; claims 1-3; figures 1-5, 8 *	1,2	
A	US-A-4 331 501 (TEED) * column 5, lines 31-48; column 6, lines 17-34; claim 1; figures 2, 7 *	2	
A	EP-A-0 059 015 (PROCTER & GAMBLE CO.) * page 5, line 25 - page 6, line 8; page 16, lines 6-12; claim 1, figures 1, 2 *	1	TECHNICAL FIELDS SEARCHED (Int. Cl. 4) A 61 F 13/00 A 61 L 15/00 A 41 B 13/00
A	GB-A-2 098 871 (KIMBERLY-CLARK CORP.) * page 2, lines 24-34; claim 1; figure 2 *	1	
The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 16-06-1987	Examiner MONNE E.M.B.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	